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QUALITY OF CARE AND OUTCOMES ASSESSMENT

β2 ADRENERGIC RECEPTOR POLYMORPHISMS AND NOCTURNAL BLOOD PRESSURE DIPPING STATUS IN THE WISCONSIN SLEEP COHORT STUDY

ACC Poster Contributions

Ernest N. Morial Convention Center, Hall F

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Session Title: Genetic Associations with Cardiovascular Phenotypes and Endophenotypes

Abstract Category: 48. Genetics and Clinical Outcomes

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Background: Non-dipping (ND) nocturnal blood pressure (BP) is associated with cardiovascular disease, and beta-adrenergic receptor (β-AR) single nucleotide polymorphisms (SNPs) have been linked with hypertension. We investigated associations of β1- and β2-AR SNPs with ND BP patterns.

Methods: Participants (N=497, age range 30-74 years, 40% female) of a longitudinal study of sleep and cardiovascular disease with ambulatory BP monitoring tests and not taking antihypertensives were included. ND and dipping ratios (DR) were defined as less than a 10% dip in sleep BP compared to wake BP, and sleep/wake BP, respectively. SNPs in the β1-AR (rs7076938, tagging for Gly389Arg) and β2-AR (rs17778257 and rs2400707, tagging for Arg16Gly and Gln27Glu) genes were selected based on r² values (0.91, 0.94, & 0.96) & presence on Affy 500K array set and 6.0 typing platforms.

Results: Mean wake and sleep BP were 127/77 mmHg and 108/63 mmHg, and mean DR for systolic and diastolic BP were 0.85 and 0.81. β2-AR SNP rs2400707 A-positive subjects (tagging for Glu27) had higher systolic and diastolic DR. The β2-AR rs2400707 AA genotype was associated with diastolic ND (non-dipping OR 2.1 [1.1, 4.2] for AA versus GG). Results were similar in models which included participants on antihypertensive medications.

Conclusions: Higher dipping ratios indicative of a lack of nocturnal BP dipping are associated with β2-AR polymorphisms. Nocturnal dipping patterns may be modulated by β2-AR polymorphisms.

	Mean Systolic Dipping Ratio (SD)	Mean Diastolic Dipping Ratio (SD)
B2 rs2400707	0.846 (0.004)	0.807 (0.005)
GG	0.854 (0.004)	0.815 (0.005)
AG	0.861 (0.005)	0.824 (0.007)
AA		
	p-trend=0.015	p-trend=0.026
B2 rs17778257	0.8511 (0.006)	0.811 (0.007)
TT	0.8531 (0.004)	0.813 (0.005)
AT	0.8534 (0.004)	0.818 (0.005)
AA		
	p-trend=0.74	p-trend=0.36
B1 rs7076938	0.851 (0.004)	0.814 (0.005)
TT	0.852 (0.004)	0.815 (0.005)
CT	0.856 (0.012)	0.815 (0.015)
CC		
	p-trend=0.69	p-trend=0.83